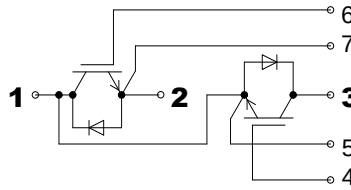


SGG300NF120UC2

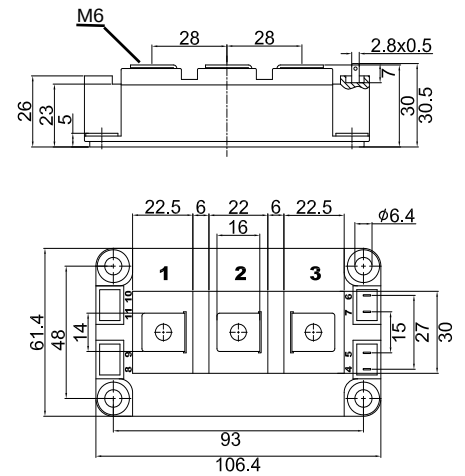
IGBT Modules



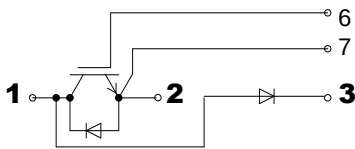
SGG300NF120UC2



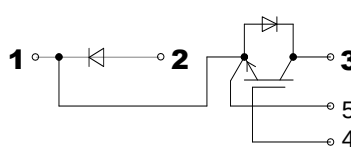
Dimensions in mm (1mm = 0.0394")



SGD300NF120UC2



SDG300NF120UC2



$T_C = 25^{\circ}\text{C}$, unless otherwise specified

Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_{Cnom}		300	A
I_{CRM}	$T_C = 25^{\circ}\text{C}$, $t_P = 1\text{ms}$	400	A
V_{GES}		± 20	V
T_{Vj}		$-40 \dots +175$	$^{\circ}\text{C}$
Inverse Diode			
I_F	$T_C = 25(80)^{\circ}\text{C}$	400(300)	A
I_{FRM}	$T_C = 25^{\circ}\text{C}$, $t_P = 1\text{ms}$	400	A
I_{FSM}	$t_P = 10\text{ms}$; $\sin$; $T_j = 150^{\circ}\text{C}$	1880	A
Module			
$I_{t(RMS)}$	$T_{terminal} = 80^{\circ}\text{C}$	500	A
T_{stg}		$-40 \sim 125$	$^{\circ}\text{C}$
V_{isol}	AC, 1min	4000	V

Features

- Planar Gate Field Stop IGBT technology
- Low switching losses
- Switching frequency > 20kHz
- Square RBSOA, no latch up
- High short circuit capability
- Positive temperature coefficient for easy paralleling
- MOS input, voltage controlled
- Soft switching FWD Technology
- Package with copper base plate
- Isolation voltage 4000V

Application

- AC and DC motor control
- AC servo and robot drives
- power supplies
- welding inverters



Advantages

- space and weight savings
- reduced protection circuits



SGG300NF120UC2

IGBT Modules

Characteristics

$T_C = 25^{\circ}\text{C}$, unless otherwise specified

Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 10\text{mA}$	4.5	5.0	5.7	V
I_{CES}	$V_{GE} = 0; V_{CE} = V_{CES}; T_j = 25^{\circ}\text{C}$			0.3	mA
$V_{CE(TO)}$	$T_j = 25^{\circ}\text{C}$		1.5	1.7	V
r_{CE}	$V_{GE} = 15\text{V}, T_j = 25(150)^{\circ}\text{C}$		3.75(4.75)	4.51(5.75)	$\text{m}\Omega$
$V_{CE(sat)}$	$I_C = 300\text{A}; V_{GE} = 15\text{V}; \text{chip level}$		2.30	2.55	V
C_{ies}	under following conditions $V_{GE} = 0, V_{CE} = 25\text{V}, f = 1\text{MHz}$		21.8		nF
C_{oes}			3.30		
C_{res}			1.90		
L_{CE}				30	nH
$R_{CC'+EE'}$	res., terminal-chip $T_C = 25(125)^{\circ}\text{C}$		0.35(0.55)		$\text{m}\Omega$
$t_{d(on)}$	under following conditions: $V_{CC} = 600\text{V}, I_C = 300\text{A}$ $R_{Gon} = R_{Goff} = 10\Omega, T_j = 125^{\circ}\text{C}$ $V_{GE} = \pm 15\text{V}$		25		ns
t_r			49		ns
$t_{d(off)}$			290		ns
t_f			88		ns
$E_{on}(E_{off})$			4.5(2.3)		mJ
Inverse Diode under following conditions:					
$V_F = V_{EC}$	$I_F = 300\text{A}; V_{GE} = 0\text{V}; T_j = 25^{\circ}\text{C}$		2.20	2.52	V
$V_{(FO)}$	$T_j = 25(150)^{\circ}\text{C}$		1.1(0.8)	1.4(1.0)	V
r_F	$T_j = 25(150)^{\circ}\text{C}$		3.3(4.1)	3.5(4.4)	$\text{m}\Omega$
I_{RRM}	$I_F = 300\text{A}; T_j = 150^{\circ}\text{C}$		350		A
Q_{rr}	$di/dt = 8800\text{A/us}$		58		μC
E_{rr}	$V_{GE} = 15\text{V}$		26		mJ
Thermal Characteristics					
$R_{th(j-c)}$	per IGBT			0.096	K/W
$R_{th(j-c)D}$	per Inverse Diode			0.180	K/W
$R_{th(c-s)}$	per module			0.063	K/W
Mechanical Data					
M_s	to heatsink M6	3		5	Nm
M_t	to terminals M6	2.5		5	Nm
Weight	typical			325	g

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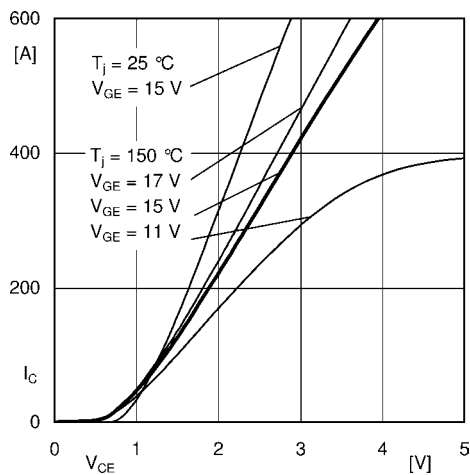


Fig. 1: Typ. output characteristic, inclusive $R_{CC'+EE'}$

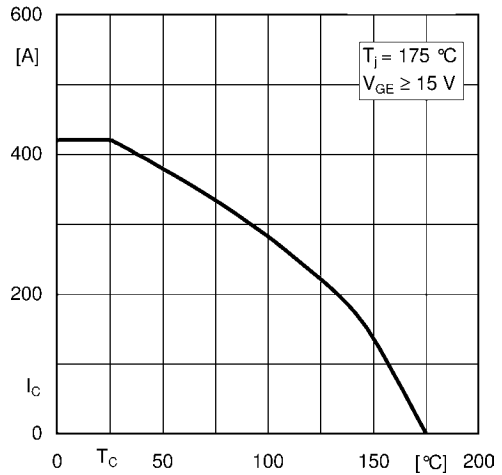


Fig. 2: Rated current vs. temperature $I_C = f(T_C)$

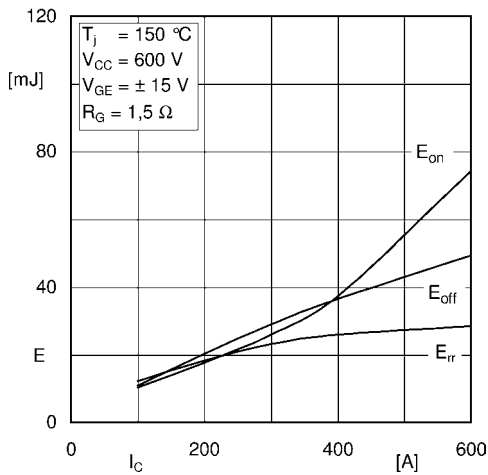


Fig. 3: Typ. turn-on /-off energy = $f(I_C)$

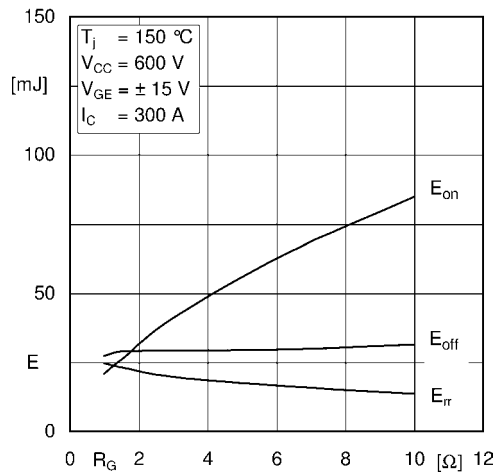


Fig. 4: Typ. turn-on /-off energy = $f(R_G)$

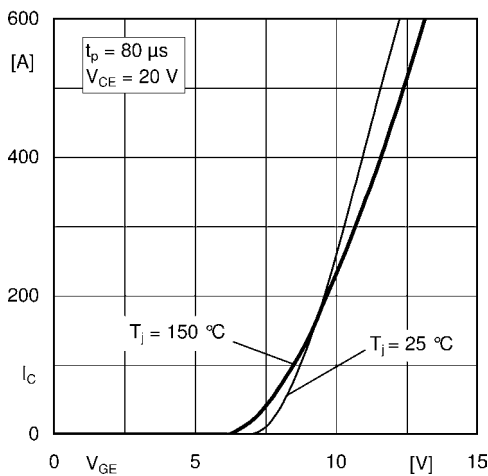


Fig. 5: Typ. transfer characteristic

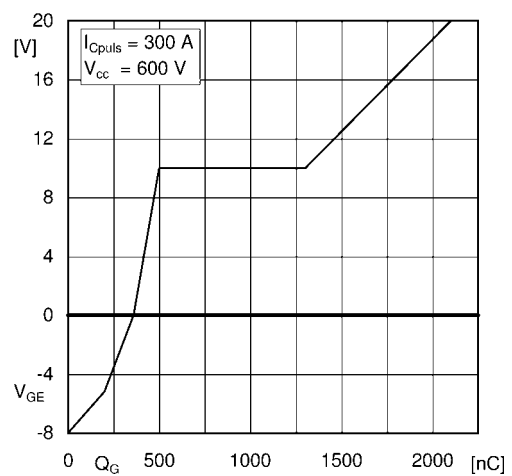


Fig. 6: Typ. gate charge characteristic

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